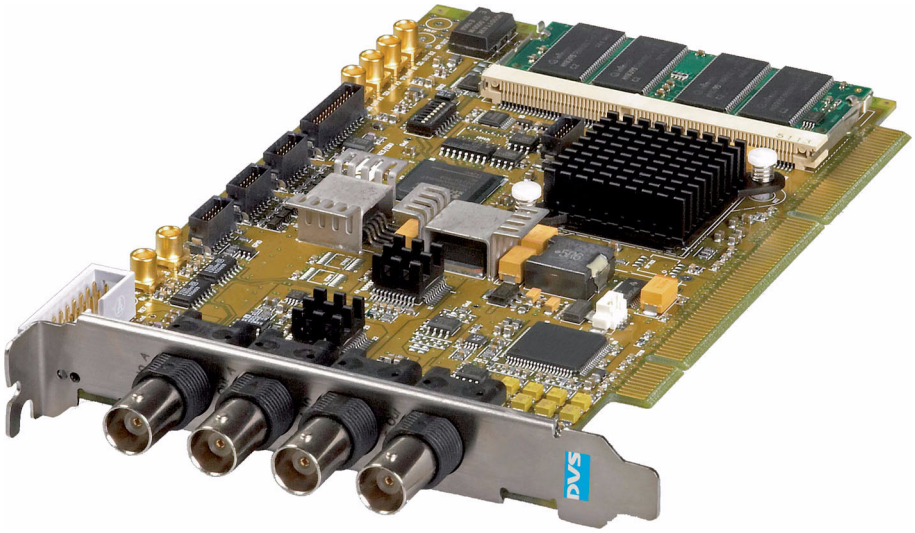
PCI Video Board

SDStationOEM II



Installation Guide

SDStationOEM II Installation Guide

Introduction

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Installation Guide Version 2.1 for the SDStationOEM II

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Dear customer,

this product was developed and tested thoroughly. Unfortunately, the possibility of problems and errors can never be ruled out. To support us in helping you as fast as possible if such a case occurs, please fill in this registration form and send or fax it to the address on the right.

You may also use our online registration form which can be accessed from the following internet page: http://www.dvs.de/english/support/support.html

Customer

Name: _____

Company: _____

Contact: _____

Address: _____

_____

_____

Phone: _____

Fax: _____

Vendor: _____

SDStationOEM II

Serial No.: _____

Remarks: _____

_____

Computer

Brand: _____ Type: _____

Operating System: _____ Version: _____

Connected devices
(Brand and type of edit controller, VTR, color grading system, etc.)

_____

_____

_____

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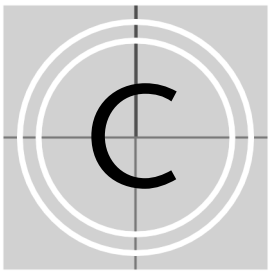

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Introduction

This documentation describes the SDStationOEM II, the second OEM board of the well-known and successful SDStationPRO family manufactured by DVS. The SDStationOEM II has been developed to replace the older version of this board with state-of-the-art technology. It offers you full compatibility with its previous version combined with new but already proven technology, thus providing for even more flexibility and power. Simply exchange the video hardware and all SDTV solutions already developed via the software development kit by DVS will run with the new SDStationOEM II as reliable as you are used to.

The SDStationOEM II is centered around the SDStationOEM II board, a half-length PCI-bus single board for the real-time input and output of uncompressed SDTV signals. With the SDStationOEM II board a computer can handle 8 and 10 bit digital serial SDTV streams. Using the same software development kit (SDK) as for the SDStationOEM you can build powerful SDTV editing and storage solutions with the new SDStationOEM II.

The section “Differences to the SDStationOEM” on page 1-9 will point out the few differences between the SDStationOEM II and the SDStationOEM.

1.1 Overview

This guide informs you about the installation of the SDStationOEM II as well as all connection possibilities. Furthermore, it provides information about the setting of license keys, the upgrade of the PCI interface, the testing of the installation and of maintenance work that you may perform on your own.

In detail the chapters contain the following information:

Chapter 1	Begins with a short introduction to the SDStationOEM II, followed by a note regarding the audience this manual is written for and an explanation of the conventions used in this manual. Beside the system requirements necessary to run the SDStationOEM II, it provides safety instructions that you must adhere to and some important notes that you should read. The chapter will be concluded with a list of differences between the new SDStationOEM II and its previous version.
Chapter 2	Gives an overview of the SDStationOEM II as an OEM product and describes shortly its individual components. Furthermore, all connectors and interfaces of the SDStationOEM II board and its additional panels will be detailed in this chapter.
Chapter 3	Describes the installation of the SDStationOEM II. First the hardware installation is explained, followed by a description of the software installation.
Chapter 4	Details service and maintenance work, for example, in case of a PCI upgrade failure.
Appendix	Provides technical details and general information about the SDStationOEM II.
Index	This chapter facilitates the search for specific terms.

1.2 Target Group

To use this guide and the SDStationOEM II you should have experience in computer software handling and be familiar with the hardware structure and interior of a computer system.

1.3 Conventions Used in this User Guide

The following typographical conventions will be used in this documentation:

– Texts preceded by this symbol are parts of a list.
• Texts preceded by this symbol describe activities that you must perform in the order indicated.

Texts preceded by this symbol are general notes intended to facilitate work and help avoid errors.

You must pay particular attention to text that follows this symbol to avoid errors and possible resulting damages thereof.

Texts following this symbol you must pay particular attention to to avoid dangers and personal injuries.

" " Texts enclosed by quotation marks are references to other manuals, guides, chapters, or sections.

'Window'	Text in bold with single quotation marks indicates a window name
Menu	Text in italic and bold indicates either a menu name or options in a menu list
BUTTON	Text in small caps and bold indicates push buttons
File	Directory structure or file
Command	Command, for example, at a prompt; a bold typeface indicates that this has to be typed in exactly as written
Command	In the standard text flow a regular typeface of a command indicates commands, variables, or parameters; it may also indicate a file syntax or contents of a file; when used in conjunction with the command in **bold**, it stands for optional parameters

1.4 Safety Instructions

To use the SDStationOEM II correctly please heed the following:

Please read the following safety instructions very carefully before attempting any installation and/or performing any work on the SDStationOEM II.

If the SDStationOEM II is not used in compliance with the safety instructions, the warranty and all resulting liability claims will be void.

General

The SDStationOEM II has been built according to the applying safety regulations. To minimize the possibility of a faulty operation of the device all manuals and guides must be available at all times at the operation site. Before installing and/or using the SDStationOEM II the manuals and guides delivered with the SDStationOEM II must be read and observed.

- Use the SDStationOEM II only in apparent good technical order.
- The system you are trying to install the SDStationOEM II in usually works with voltages that can be hazardous to your health. Never work on the system or access its interior with the power cable(s) being plugged in. Make sure the power supply is disconnected from the components you intend to work on.
- Computer hardware contains components that are sensitive to electrostatic discharge. If you touch them without precautionary measures, they can be destroyed. Use a wrist strap connected to ground when accessing electronic parts and take care of grounding the video system. Avoid touching the internal components of the computer system and the SDStationOEM II whenever possible.
- Computer hardware contains components that are sensitive to changing voltages. Connecting or disconnecting the SDStationOEM II to or from peripheral hardware while any of them is switched on may damage the hardware. Switch off all peripheral hardware before connecting or disconnecting anything.
- Use the SDStationOEM II only in compliance with the technical data laid out in section “Technical Data” on page A-1.
- The SDStationOEM II may not be misused, abused, physically damaged, neglected, exposed to fire, water or excessive changes in the climate or temperature, or operated outside maximum rating.
- Do not perform any changes or extensions to the SDStationOEM II whatsoever.

Environmental Conditions

For error-free working and a long service life, the SDStationOEM II needs some basic environmental conditions:

- Do not expose the SDStationOEM II to sources of heat, such as direct sunlight or a radiator.
- The chassis of the computer system where the SDStationOEM II board is installed must be equipped with a sufficient ventilation for cooling reasons.
- Avoid areas with high humidity or dust. Best operating conditions are given in an air-conditioned site.
- Do not expose the SDStationOEM II to strong electric or magnetic fields.
- Avoid areas where the SDStationOEM II will be subject to vibrations or shocks.

1.5 Important Notes

The following provides information about warranty and the conformity of the product. Furthermore, it includes an important note if you want to unplug cables and some information about optionally available breakout boxes.

Warranty Information

This product is warranted to be free of defects in materials and workmanship for a period of one year from the date of purchase. DVS extends this Limited Warranty to the original purchaser.

In the event of a defect or failure to confirm to this Limited Warranty, DVS will repair or replace the product without charge. In order to make a claim under this Limited Warranty, the purchaser must notify DVS or their representative in writing of the product failure. In this Limited Warranty the customer must upon DVS' request return the product to the place of purchase or send the defective device to a given address for the necessary repairs to be performed. If the customer is not satisfied with the repair, DVS will have the option to either attempt a further repair, exchange the product or refund the purchase price.

This warranty does not cover:

- Products not developed by DVS Digital Video Systems GmbH.
- Products not used in compliance with the safety instructions detailed in section "Safety Instructions" on page 1-4.
- Products on which warranty stickers or product serial numbers have been removed, altered or rendered illegible.
- The costs of installations, removals, transportations, or reinstallations.
- Costs for transportation damages.
- Damages caused to any other item.
- Any special, indirect, or consequential damages, and damages resulting from loss of use, data, or profits, or business interruption.

Declaration of Conformity

This product has been tested according to the applying national and international directives and regulations. Further information about this can be found in section "Conformity Declarations" on page A-8.

Unplugging Cables

If you want to unplug one of the flat cables after its installation on the board, please observe the following:

Flat cable connectors are equipped with a locking mechanism to prevent them from becoming disconnected after they were plugged in.

Don't use any force to disconnect flat cable plugs, otherwise the socket on the board may be damaged or even break off.

To unplug the connector use your index finger and thumb to press the locking wings together.

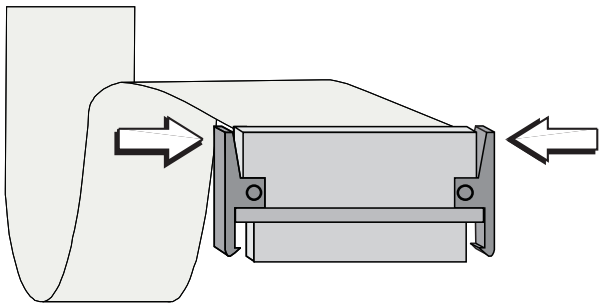


Figure 1-1: Unplugging flat cables

Then you can easily remove the connector.

Breakout Box

A modular breakout box is optionally available for the SDStationOEM II to replace the breakout cables and/or reduce the amount of additional panels. Due to its modular design – each module provides connectors on a half-19" front panel – you can adapt the overall configuration to your personal needs. To connect to the breakout box a different slot panel will be included in its delivery which will replace all additional slot panels described in this manual (see section "Overview of Panels" on page 2-9).

For more information about the different types of breakout boxes available for the SDStationOEM II please refer to the "Breakout Box II" installation guide which can be found on the DVS OEM web pages, or contact your local vendor or DVS directly.

1.6 System Requirements

Required Hardware

These are the minimum hardware requirements that the computer system has to meet if you want to use the SDStationOEM II.

– Mainboard with 32-/64-bit, 33- or 66-MHz PCI bus (3.3 V)

Contrary to its previous version the SDStationOEM II operates also with 66 MHz. However, it can be plugged into a 3.3-volt PCI bus only (see section "Differences to the SDStationOEM" on page 1-9).

Ex factory the board is set to operate with 33 MHz.

– 1 free slot in a bus-master capable PCI segment
– 64 MB RAM

Supported Operating Systems

The SDStationOEM II can be used with the following operating systems:

– Windows 2000 and XP
– Linux (Red Hat and Fedora)
– IRIX

Be sure that you have installed the newest Service Packs for your system, otherwise you may encounter soft- and/or hardware problems.

Required Software

The SDStationOEM II needs the DVS driver. Furthermore, to be programmed for applications the SDK by DVS is necessary. Both software components should be included in your delivery. They are also available online on the DVS OEM web pages.

1.7 Differences to the SDStationOEM

The SDStationOEM II has been developed to replace the older version of this board, the SDStationOEM, with state-of-the-art technology. It offers you full compatibility with its previous version combined with new but already proven technology. In the following you can find the most important differences to the SDStationOEM:

Item	Difference and Reason
Genlock termination switch	The genlock termination switch is no longer available at the panel of the PCI video board. Usually, the genlock signals are not distributed in a bus topology but in a star topology. This means that the SDStationOEM II is most likely to be the last link in a genlock connection where a manually set termination is not necessary.
Loop-through of video input port A (LOOP A)	The SDStationOEM II no longer provides a hardware loop of the SDI video input port of channel A. In most cases a loop can be realized via memory and one of the standard SDI outputs.
66 MHz support	For compatibility reasons and to get the advantage of a faster PCI interface the SDStationOEM II is able to operate with 33 MHz or 66 MHz. Its previous version supported 33 MHz only.
5 volt PCI compatibility	The SDStationOEM was 3.3 volt as well as 5 volt compatible. However, the SDStationOEM II supports only 3.3 volt PCI slots because the mainboards of today's computer systems are all 3.3 volt compatible.

Overview

This chapter shows an overview of the SDStationOEM II thereby detailing all connectors and interfaces of the PCI video board and its additional panels. First the components of the DVS OEM product as it is delivered to you are described shortly. Afterwards an overview of the connectors and interfaces present at the SDStationOEM II board is provided, followed by a detailed overview of the delivered slot panels.

Please note that some or even all of the slot panels may not be included in your SDStationOEM II configuration. They belong to optional features of the SDStationOEM II and are only necessary if you have ordered the respective feature.

2.1 Overview of the OEM Product

The SDStationOEM II as an OEM product consists of various individual components that combined will give you the opportunity to develop your own real-time video and film solutions. The following diagram shows the different components included in your delivery of the SDStationOEM II in detail:

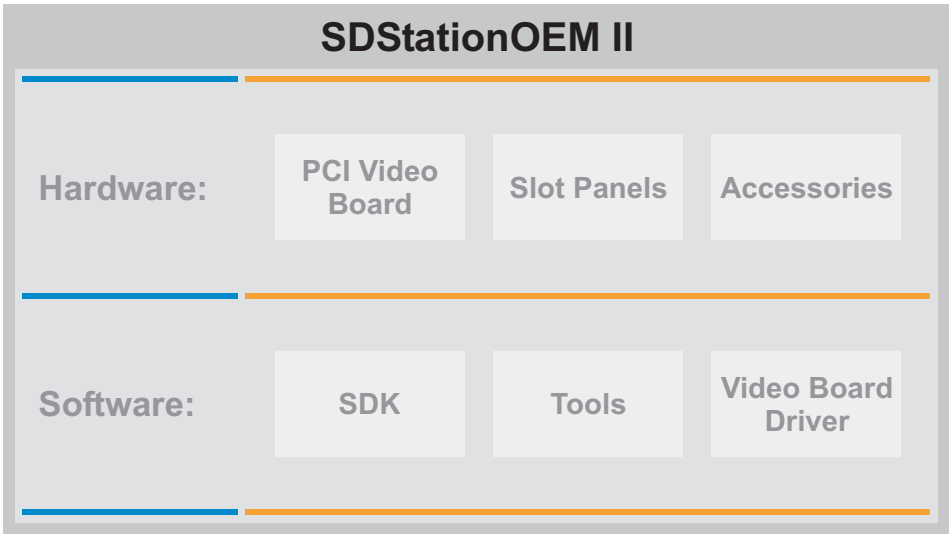


Figure 2-1: SDStationOEM II overview

The components of the SDStationOEM II can be divided into hardware and software components:

To the hardware components belong the items described in this installation guide. The SDStationOEM II is centered around the SDStationOEM II board, a half-length PCI-bus single board for the real-time input and output of uncompressed SDTV signals. With the SDStationOEM II board a computer can handle 8 and 10 bit digital serial SDTV streams as well as audio and timecode. To use all the features of the SDStationOEM II (e.g. key channel or audio) various slot panels may have been delivered to you as well as other accessories such as breakout cables. All these items and their installation will be described in this manual.

Among the software components you can find the software development kit (SDK) that can be used to build editing and storage solutions with the SDStationOEM II. The SDK is compatible among the DVS OEM products meaning your code can be used with other DVS OEM boards as well. Several tools for basic hardware setup and diagnostics such as the DVSConf program complement the SDK. To run properly the video board driver has to be loaded prior to using the SDStationOEM II which can be done with the tools for the hardware setup. The video board driver controls the SDStationOEM II board and

thus the in- and output of video signals. The SDK as well as all other software components are described in the separate SDK documentation.

2.2 Overview of the Board

The SDStationOEM II hardware is a complex piece of technology. It is on the one hand fully compatible with its previous version, the SDStationOEM, on the other hand it offers even more flexibility and power through state-of-the-art technology.

This section provides an overview of the SDStationOEM II board including a detailed description of the connectors, interfaces and switches present at the PCI video board.

2.2.1 SDStationOEM II Board Layout

The SDStationOEM II board provides the same four BNC connectors as they were available on its predecessor product, the SDStationOEM. They offer the most necessary digital video connections, i.e. the reference input, the main ports of the serial digital interface (SDI input A and output A) and a composite output. With this you have a true one-to-one replacement for the older board version at hand.

The secondary (B) ports of the SDI connectors can be found on the optionally available SDI panel.

The following provides an overview of the SDStationOEM II board, describing all connectors, interfaces and switches:

The items available on the SDStationOEM II board which are not described in the following are used during the manufacturing process only and without function in normal operation mode.

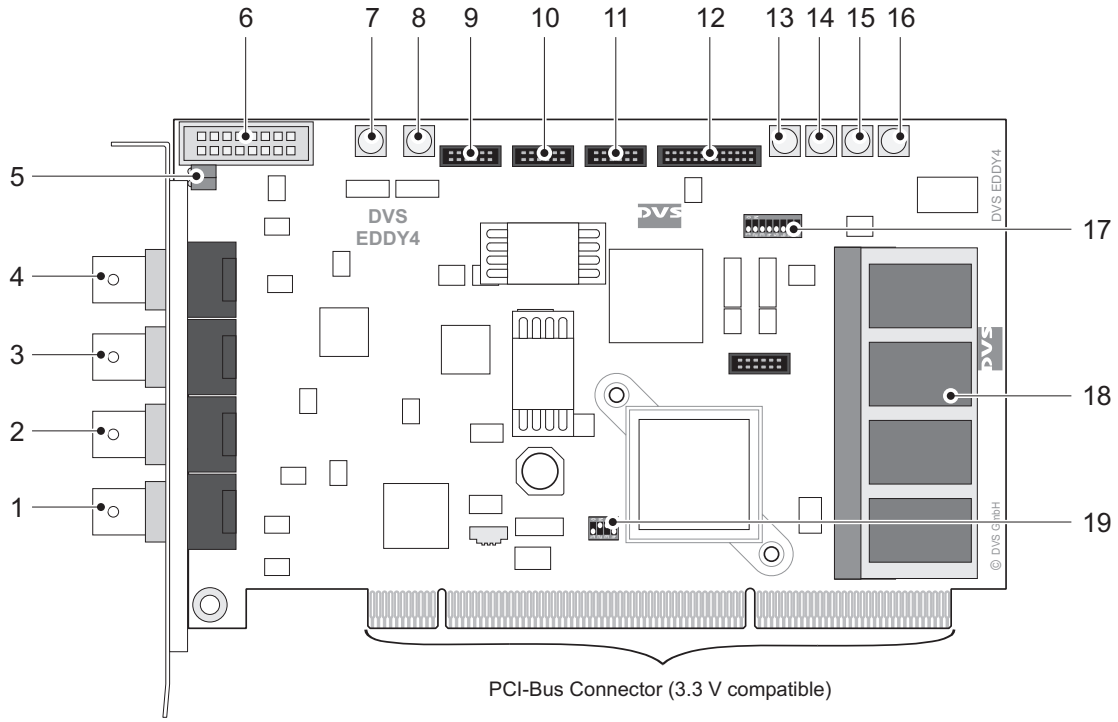


Figure 2-2: Items and connectors of the SDStationOEM II board

No.	Item	Explanation
1	CVBS OUT	BNC connector for a composite video burst signal, either analog output of SD video or used for synchronization purposes
2	REF IN	BNC connector for the reference input
3	SDI OUT A1	BNC connector for the first output of port A (serial digital interface); either output of YUV in single-link or first stream of YUVA/RGB[A] in dual-link mode
4	SDI IN A1	BNC connector for the first input of port A (serial digital interface); either input of YUV in single-link or first stream of YUVA/RGB[A] in dual-link mode
5	LEDs	The two status LEDs indicate the presence of correct video and sync signals (see section “LEDs” on page 2-7)
6	Analog Audio & Video	Flat cable connector for analog audio and video signals

No.	Item	Explanation
7	SDI IN A2	MCX connector for the second input of port A (serial digital interface); either input of YUV in single-link or first stream of YUVA/RGB[A] in dual-link mode
8	SDI IN B	MCX connector for the input of port B (serial digital interface); input of second stream of YUVA or RGB[A] in dual-link mode
9	GPI/WCLK OUT	Flat cable connector for the general purpose interface and wordclock signal
10	RS-422 C/D	Flat cable connector for the in- and output of RS-422 signals (secondary and auxiliary RMT ports)
11	RS-422 A/B	Flat cable connector for the in- and output of RS-422 signals (main RMT ports)
12	AES/EBU	Flat cable connector for digital audio
13	SDI OUT A1	MCX connector for the first output of port A (serial digital interface); either output of YUV in single-link or first stream of YUVA/RGB[A] in dual-link mode
14	SDI OUT A2	MCX connector for the second output of port A (serial digital interface); either output of YUV in single-link or first stream of YUVA/RGB[A] in dual-link mode
15	SDI OUT B1	MCX connector for the first output of port B (serial digital interface); output of second stream of YUVA or RGB[A] in dual-link mode
16	SDI OUT B2	MCX connector for the second output of port B (serial digital interface); output of second stream of YUVA or RGB[A] in dual-link mode
17	DIP Switch A	DIP switch A controls the operation of the on-board Flash controller; further information about the DIP switches and their settings can be found in section “DIP Switch Settings” on page 2-8
18	Memory	RAM memory module
17	DIP Switch B	With DIP switch B you can set up the PCI clock frequency; further information about the DIP switches and their settings can be found in section “DIP Switch Settings” on page 2-8

2.2.2 Digital Video I/O

The digital video I/Os have dual-link capabilities. Thus each I/O consists of two ports labeled 'A' and 'B'. In YC_bC_r/4:2:2 mode you only need one I/O port (single link, port A), but whenever you intend to work with key or in 4:4:4 modes, you have to use both I/O ports (dual link, port A and B).

Regarding the digital video I/Os the SDStationOEM II board offers:

– Two inputs consisting of two switchable A ports and one permanent B port, i.e. with the SDK you can select one of the A ports (A1 or A2) as the active video input. The respective B port is always active independent of the selected A port.
– Two concurrent outputs, each consisting of an A and a B port, i.e. both outputs give out the same signals at the respective ports.

With the SDK you can swap the signal distribution over the ports. On the outputs, the SDK allows to swap the main and secondary port. The following table shows how the signals are distributed over the I/O ports in different color modes. The first row always shows the default behavior, the second row the swapped behavior:

Swapping the output ports is always possible, but the output signal of the secondary port depends on the licensed options. If a certain signal (e.g. key) is not available, because the corresponding feature is not licensed, a gray signal will be given out instead.

Video Mode	Input, Port A	Input, Port B	Output, Port A	Output, Port B
YC_bC_r 4:2:2	Y, C_b, C_r	–	Y, C_b, C_r	–
			–	Y, C_b, C_r
YC_bC_rA 4:2:2:4	Y, C_b, C_r	A	Y, C_b, C_r	A
			A	Y, C_b, C_r
YC_bC_r 4:4:4	Y, ½ C_b, ½ C_r	½ C_b, ½ C_r	Y, ½ C_b, ½ C_r	½ C_b, ½ C_r
			½ C_b, ½ C_r	Y, ½ C_b, ½ C_r
YC_bC_rA 4:4:4:4	Y, ½ C_b, ½ C_r	½ C_b, ½ C_r, A	Y, ½ C_b, ½ C_r	½ C_b, ½ C_r, A
			½ C_b, ½ C_r, A	Y, ½ C_b, ½ C_r
RGB 4:4:4	G, ½ R, ½ B	½ R, ½ B	G, ½ R, ½ B	½ R, ½ B
			½ R, ½ B	G, ½ R, ½ B
RGBA 4:4:4:4	G, ½ R, ½ B	½ R, ½ B, A	G, ½ R, ½ B	½ R, ½ B, A
			½ R, ½ B, A	G, ½ R, ½ B

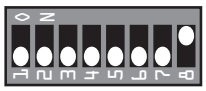
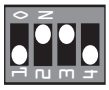
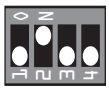
2.2.3 LEDs

The SDStationOEM II board panel holds two status LEDs that signal whether correct video and sync signals are available at the respective digital inputs. In detail they provide the following signals:

LED	Function	Modus	Meaning
green	Signals the status of the sync input	on	A correct sync signal is detected, i.e.: – Sync mode 'internal' is set – Sync mode 'external' is set and a correct signal is connected – sync mode 'analog' is set and an analog genlock signal is connected – Sync mode 'digital' is set and a correct signal is connected
		off	A wrong input signal is detected, i.e.: – Sync mode 'external' is set and no SDI input signal – Sync mode 'analog' is set and no genlock signal connected – Sync mode 'digital' is set and no SDI input signal
red	Signals the status of the video raster detection feature	blinking slowly	No input signal is available.
		blinking fast	A wrong input signal is detected (e.g. the SDStationOEM II is set to NTSC video mode, but a PAL signal is connected to the active input).
		off	A correct input signal is detected.

2.2.4 DIP Switch Settings

The DIP switches on the PCI video board enable you to set the board into different modes manually. The two DIP switches provide the following possibilities:

<table>
<tr><td rowspan="3">DIP Switch A</td><td colspan="2">This switch controls the operation of the on-board Flash controller. It defines the version set of the map file that will be loaded at startup. If you encounter a failure during a PCI upgrade you have to use this switch to load a safe mode programming (fallback map) of the PCI video board. Please observe the orientation of the switch on the board.</td></tr>
<tr><td> </td><td>Default setting of the DIP switch (factory setting)</td></tr>
<tr><td>  </td><td>In case you want to counteract a PCI upgrade failure (see chapter “Maintenance” on page 4-1), this setting enables you to load a safe mode programming of the PCI video board</td></tr>
<tr><td rowspan="3">DIP Switch B</td><td colspan="2">DIP switch B is used to set up the PCI board interface, i.e. its clock frequency. The SDStationOEM II board is by default set to operate with 33 MHz (position 3 = ON). Please observe the orientation of the switch on the board.</td></tr>
<tr><td>  </td><td>PCI 33 MHz (factory setting)</td></tr>
<tr><td>  </td><td>Autodetection (PCI 33 or 66 MHz)</td></tr>
</table>

The SDStationOEM II board needs a PCI interface that works with either 33 or 66 MHz. All other PCI types and clock frequencies are not supported.

2.3 Overview of Panels

If applicable for your personal setup of the OEM product, the SDStationOEM II can be delivered with a full complement of slot panels. Usually, these are used to provide all the connection possibilities for the various features of the SDStationOEM II at a computer casing. However, because the SDStationOEM II was meant on the one hand to replace its first version, the SDStationOEM, as well as to extend its features on the other, the SDStationOEM II can be connected to all kinds of different slot panels: some of these have been adopted from its older version, some of them are new.

The SDStationOEM II can even be used almost without any additional slot panels at all. In this case you will have the possibility to connect the SDStationOEM II to modular breakout boxes that are optionally available. These will then replace the additional panels described in this section (save one that you will receive together with the breakout box(es) to connect to them).

Further information about the breakout box(es) can be found in section “Breakout Box” on page 1-7.

This section provides an overview of all slot panels that are available for the SDStationOEM II, adopted ones from its previous version as well as new ones. Nevertheless, as already indicated some of the described panels may not be included in your SDStationOEM II delivery. They either belong to optional features of the SDStationOEM II and are only necessary if you ordered the respective feature, or they are not necessary for your configuration at all.

To confirm your personal setup of the SDStationOEM II it is recommended to check your original order placed with DVS as well as the delivery note which has been included in your delivery of the SDStationOEM II on an extra sheet of paper.

2.3.1 Analog Audio & Video Panel

The analog audio and video panel provides the connectors that will be needed to monitor audio and video. However, the CVBS output can also be taken from one of the BNC connectors present on the slot panel of the SDStationOEM II board (see section "SDStationOEM II Board Layout" on page 2-3).

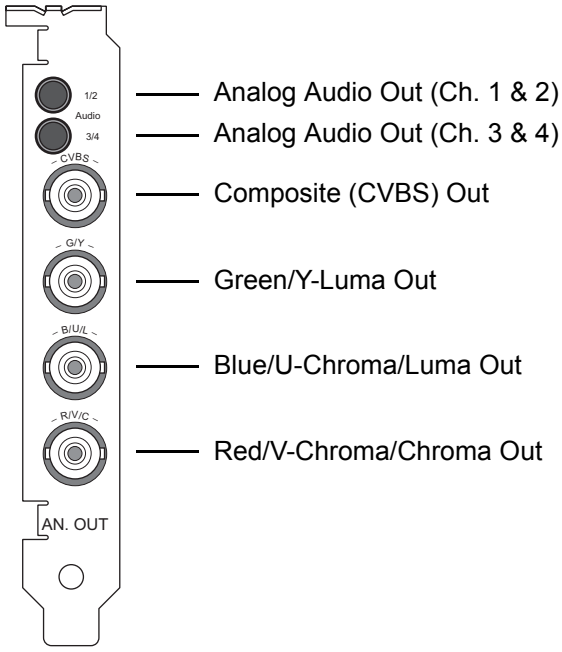


Figure 2-3: Analog audio & video panel

Item	Explanation
Analog Audio Out (Ch. 1 & 2)	3.5 mm unbalanced stereo headphone jack to monitor the audio output of channels 1 and 2
Analog Audio Out (Ch. 3 & 4)	3.5 mm unbalanced stereo headphone jack to monitor the audio output of channels 3 and 4
Composite (CVBS) Out	BNC connector for a composite video burst signal, either analog output of SD video or used for synchronization purposes
Green/Y-Luma Out	BNC connector for an analog output of green in RGB or Y-Luma in YUV
Blue/U-Chroma/Luma Out	BNC connector for an analog output of blue in RGB or U-Chroma/Luma in YUV
Red/V-Chroma/ Chroma Out	BNC connector for an analog output of red in RGB or V-Chroma/Chroma in YUV

2.3.2 RS-422 Panels

The RS-422 panels hold the interfaces for master and slave control as well as the second input and output of the serial digital interface's A ports. The in- and output of the B ports of the SDI can be found on the SDI panel.

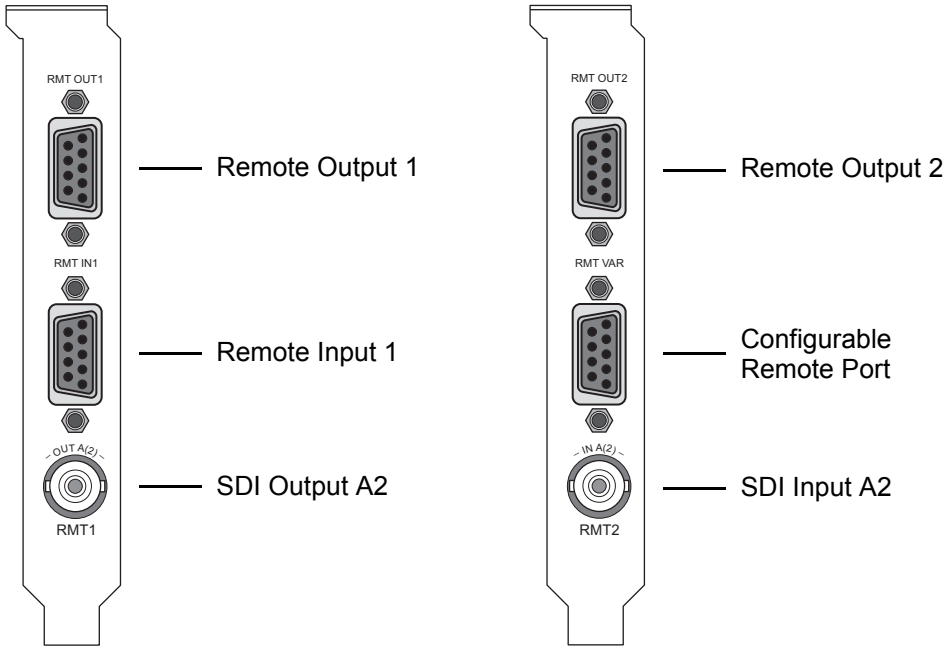


Figure 2-4: RS-422 panel no. 1 and 2

Pin-outs of the DB-9 connectors can be found in section "Signal In- and Outputs" on page A-4.

Item	Explanation
Remote Output 1	DB-9 connector (female), first serial RS-422 interface for output of master control
Remote Input 1	DB-9 connector (female), first serial RS-422 interface for input of slave control
SDI Output A2	BNC connector for the second output of port A (serial digital interface); either output of YUV in single-link or first stream of YUVA/RGB[A] in dual-link mode
Remote Output 2	DB-9 connector (female), second serial RS-422 interface for output of master control

Item	Explanation
Configurable Remote Port	DB-9 connector (female), configurable serial RS-422 interface for out- or input of master/ slave control
SDI Input A2	BNC connector for the second input of port A (serial digital interface); either input of YUV in single-link or first stream of YUVA/RGB[A] in dual-link mode

2.3.3 Serial Digital Interface (SDI) Panel

The SDI panel holds some of the SDI inputs and outputs, i.e. the digital video I/Os. The other SDI connectors can be found on the SDStationOEM II board panel and the RS-422 panels, if available.

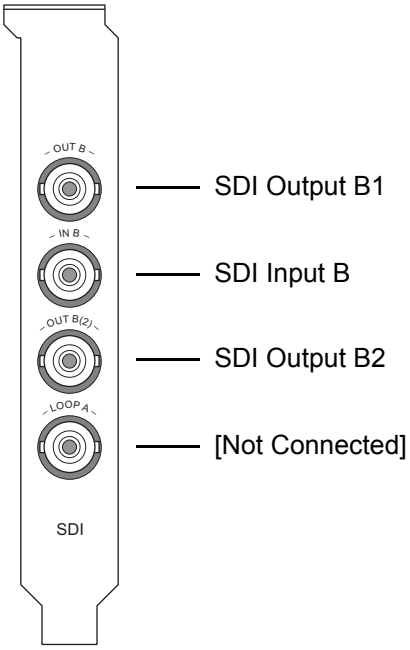


Figure 2-5: SDI panel

Item	Explanation
SDI Output B1	BNC connector for the first output of port B (serial digital interface); output of second stream of YUVA or RGB[A] in dual-link mode
SDI Input B	BNC connector for the input of port B (serial digital interface); input of second stream of YUVA or RGB[A] in dual-link mode
SDI Output B2	BNC connector for the second output of port B (serial digital interface); output of second stream of YUVA or RGB[A] in dual-link mode
[Not Connected]	Contrary to its previous version the SDStationOEM II does not provide a loop-through of an input; therefore this BNC connector is not connected (see section "Differences to the SDStationOEM" on page 1-9)

2.3.4 Audio Panel (TCI)

The audio panel (TCI) provides an analog stereo headphone output and a DB-25 connector for digital audio (AES/EBU) and LTC signals.

If the audio panel (TCI) is included in your delivery, the analog audio and video panel (see section “Analog Audio & Video Panel” on page 2-10) and the AES/EBU audio panel (see section “AES/EBU Audio Panel” on page 2-18) will probably not be necessary for your configuration and thus will not be included in your delivery.

To the DB-25 connector you can either connect a breakout cable providing eight XLR connectors to interface directly with audio devices, or a half-19" audio breakout box which is optionally available. The latter will then provide the necessary connections in one place. Further information about the breakout box(es) can be found in section “Breakout Box” on page 1-7. A pin-out of the DB-25 connector can be found in section “Signal In- and Outputs” on page A-4.

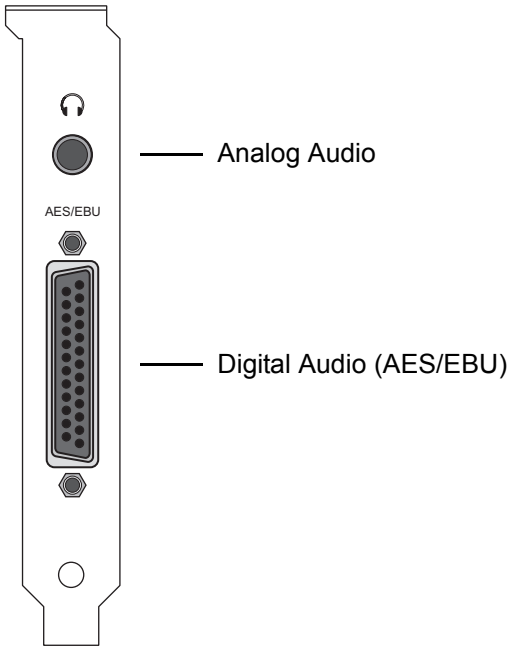


Figure 2-6: Audio panel (TCI)

Item	Explanation
Analog Audio	3.5 mm unbalanced stereo headphone jack to monitor the audio output
Digital Audio (AES/EBU)	DB-25 connector (female) for audio signal in- and output of channels 1 to 8; a pin-out of this connector can be found in section “Signal In- and Outputs” on page A-4

Prior to the installation of the audio panel (TCI) you have to set the jumpers on the printed board to their desired settings: you can choose between four digital stereo channels or three digital stereo channels and one LTC in- and output. This is described in detail in section “Jumper Settings of the Audio Panel (TCI)” on page 3-3.

2.3.5 GPI and Wordclock Panel

The GPI and audio wordclock panel is optionally available and provides the general purpose interface and the audio wordclock in- and output.

The GPI port could be used for all kinds of triggers that have to be sent to your audio/video system. The provided plug is a DB-9 male connector. A pin-out of this connector can be found in section “Signal In- and Outputs” on page A-4.

A clock frequency according to the currently adjusted audio mode will be supplied by the wordclock output to synchronize to external audio equipment. To synchronize the SDStationOEM II with such an equipment this panel also provides a wordclock input.

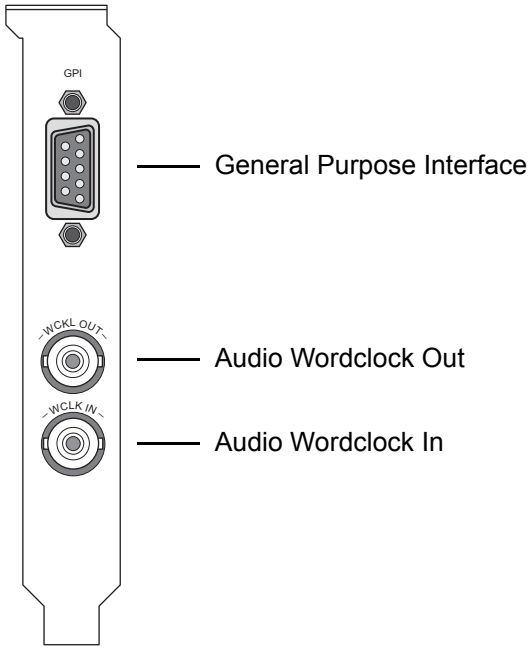


Figure 2-7: GPI and wordclock panel

Item	Explanation
General Purpose Interface	DB-9 connector (male) for the general purpose interface; a pin-out of this connector can be found in section “Signal In- and Outputs” on page A-4
Audio Wordclock Out	BNC connector providing a wordclock signal for the synchronization of external audio equipment
Audio Wordclock In	BNC connector to synchronize the SDStationOEM II with external audio equipment

Prior to the installation of the GPI and audio wordclock panel you have to check the jumpers on the printed board of the GPI for their correct settings. This is described in detail in section “Jumper Settings of the GPI and Wordclock Panel” on page 3-4.

2.3.6 AES/EBU Audio Panel

The AES/EBU audio panel holds the inputs/outputs for digital audio and LTC. Usually, this panel will not be included in your delivery because all signals provided via this panel will be provided by the audio (TCI) panel (see section "Audio Panel (TCI)" on page 2-14). However, for compatibility reasons with its predecessor, the SDStationOEM, it may be included in your configuration of the SDStationOEM II.

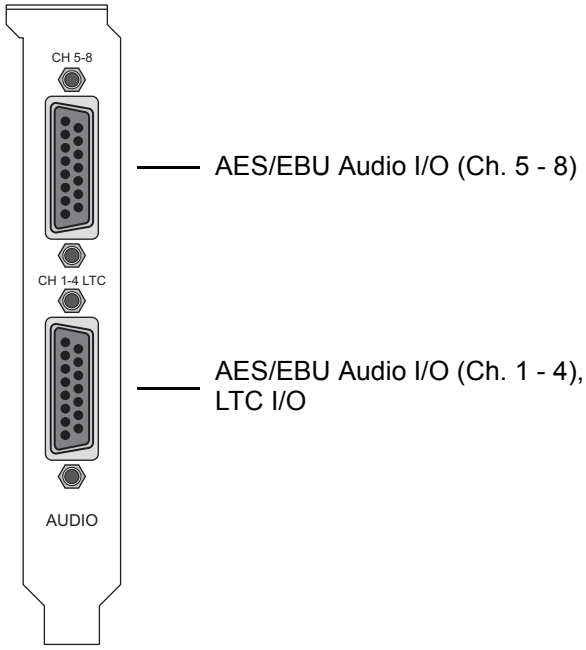


Figure 2-8: AES/EBU audio panel

Pin-outs of the DB-15 connectors can be found in section "Signal In- and Outputs" on page A-4.

Item	Explanation
AES/EBU Audio I/O (Ch. 5 - 8)	DB-15 connector (female) for audio signal in- and output of channels 5 to 8
AES/EBU Audio I/O (Ch. 1 - 4), LTC I/O	DB-15 connector (female) for audio signal in- and output of channels 1 to 4 as well as of LTC

Installation

This chapter details all the information necessary to install the SDStationOEM II in a computer system.

First, the installation of the board itself is described. After that follows a description on how to activate the ordered features. The SDStationOEM II offers a lot of features to the user. Some of these are included in the standard version of the SDStationOEM II, some belong to optional packages and have to be ordered explicitly if you want to use them. Via a license key the whole feature set that you have ordered with the SDStationOEM II can be activated.

For some installations it may be necessary to upgrade the PCI interface (firmware) of the SDStationOEM II. This is described in this chapter as well.

Once everything is set, you may test your installation and system configuration if everything is working properly.

3.1 Hardware Installation

How to install the SDStationOEM II in a computer system is described in this section. The installation has to be performed in four steps: First, you have to prepare the computer system and some of the panels, if included in your configuration. After that the board itself must be installed. This is followed by the installation of the different panels. As the fourth and last step the hardware installation has to be finished.

If you want to disconnect the flat cables from the board once they are plugged in, please read section “Unplugging Cables” on page 1-7.

3.1.1 Preparations

Before installing the SDStationOEM II board the computer system and some of the panels have to be prepared for the installation. Furthermore, the desired clock frequency for the board has to be selected. All these preparations will be described in the following.

Preparing the Computer System

To prepare the computer system where the SDStationOEM II should be installed perform the following:

- Disconnect all cables (especially the power cords) from the computer system where the SDStationOEM II is to be installed.

The computer system you are trying to install the SDStationOEM II in usually works with voltages that can be hazardous to your health.

Never work on the system or access its interior with the power cable(s) being plugged in. Make sure the power supply is disconnected from the components you intend to work on.

- Open the computer casing.

For details on how to do this please refer to the respective manufacturer’s manual.

Computer hardware contains components that are sensitive to electrostatic discharge. If you touch them without precautionary measures, they can be destroyed.

Use a wrist strap connected to ground when accessing electronic parts and take care of grounding the video system. Avoid touching the components of the computer and the SDStationOEM II board whenever possible.

The computer system is now ready for the installation of the SDStationOEM II board and you have to proceed with the checking of the panels, i.e. checking the audio (TCI) and the GPI and wordclock panel for their correct jumper settings if these panels are included in your delivery.

Jumper Settings of the Audio Panel (TCI)

Up to four stereo channels of AES/EBU or three stereo channels of AES/EBU and one LTC in- and output can be transmitted over the DB-25 connector that is available on the audio panel (TCI). This signal configuration has to be configured via jumper settings on the printed board mounted to the audio slot panel.

This panel may not be included in your configuration of the SDStationOEM II. If it is not available continue the installation with the next step, i.e. with section “Jumper Settings of the GPI and Wordclock Panel” on page 3-4.

- Before installing the audio panel (TCI) please check whether the jumpers on the printed board are set to your desired configuration:

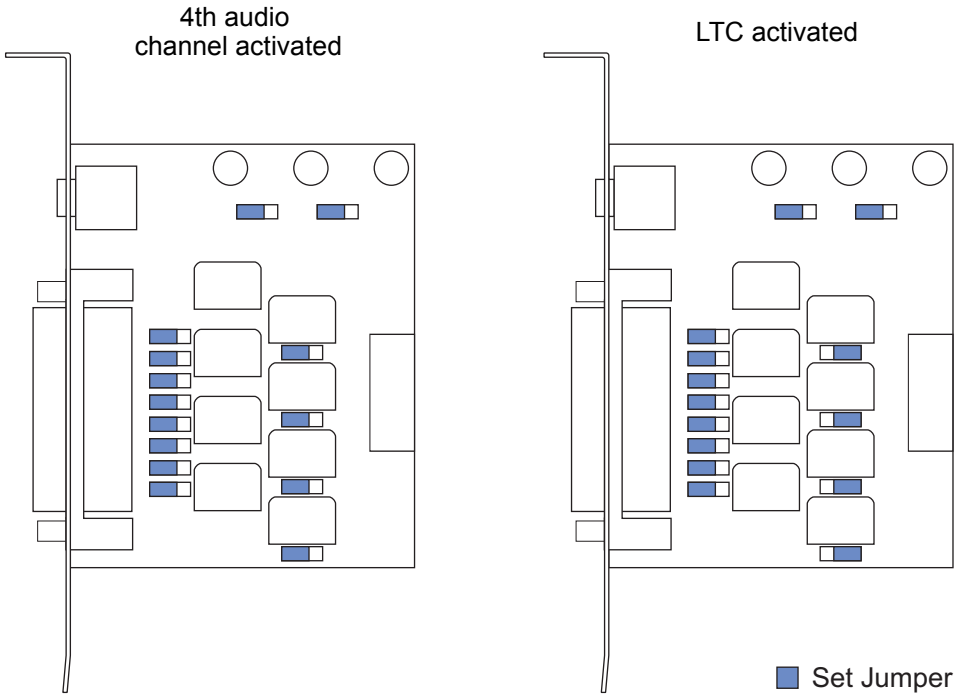


Figure 3-1: Jumper settings for audio circuit board (TCI)

After checking and, if appropriate, adjusting the jumpers of the audio panel (TCI) for their correct settings you have to check the settings of the GPI and wordclock panel.

Jumper Settings of the GPI and Wordclock Panel

Prior to the installation of the GPI and wordclock panel, you have to check the jumpers on the printed board of the GPI for their correct settings. If they are not set correctly, using this interface may result in an unexpected behavior of the SDStationOEM II.

This panel may not be included in your configuration of the SDStationOEM II. If it is not available continue the installation with the next step, i.e. with section “Setting up the Clock Frequency” on page 3-5.

- Please check whether the jumpers are set as shown in the figure below:

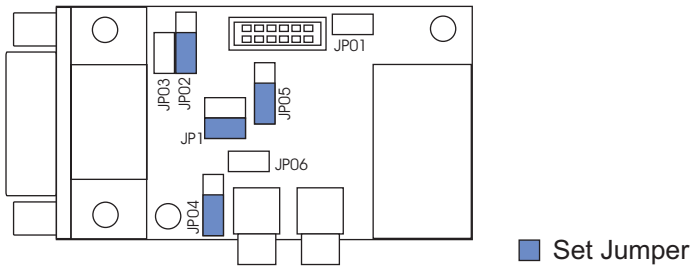


Figure 3-2: Jumper settings for GPI and wordclock panel

After checking and, if appropriate, adjusting the jumpers on the printed board of the GPI you have to set up the clock frequency of the SDStationOEM II board.

Setting up the Clock Frequency

If you want to use the SDStationOEM II board with a clock frequency different from the factory setting (33 MHz), you have to change the setting of DIP switch B on the SDStationOEM II board to the appropriate frequency:

- Set the DIP switch B on the SDStationOEM II board to the setting of your liking, i.e. either to 33 or 66 MHz, as indicated in section "DIP Switch Settings" on page 2-8.

After setting up the board for the desired clock frequency the preparations are finished and you can go on with the next step and install the board into the computer system.

3.1.2 Installation of the Board

With the second step the SDStationOEM II board will be installed in the prepared computer system. For this perform the following:

For an optimum performance of the SDStationOEM II it is recommended to have no other data transfers running in the same PCI bus.

- In the computer system remove the slot bracket from the 33-/66-MHz PCI slot where the SDStationOEM II board should be installed.

For the next step please observe not to break off any parts of the PCI video board. Apply pressure to the slot panel and/or the printed circuit board only, not to any of its attached parts.

- Insert the SDStationOEM II board without using excessive force or bending it.

- Afterwards fasten the board with the screw from the slot bracket.

The chassis of the computer system where the SDStationOEM II board is installed must be equipped with a sufficient ventilation for cooling reasons.

After this the SDStationOEM II board is installed in the computer system and you can move on to the next step, i.e. the installation of the panels.

3.1.3 Installation of the Panels

As the third step you have to connect the delivered panels internally to the SDStationOEM II board and install them in your computer system. For this perform the following:

- Remove as many slot brackets as you need for the additional panels.

The number of additional panels depends on the optional features ordered with the SDStationOEM II. If the SDStationOEM II serves as a replacement for its previous version there may also be some panels already available that you may connect to the SDStationOEM II if needed.

- Now install the panels: Insert the panels of the SDStationOEM II into the empty slots and fasten each with a screw from the slot brackets.
- Connect the cables to the appropriate SDStationOEM II board interfaces as detailed in the following:

Connecting the Analog Audio & Video Panel

The analog audio and video panel has to be connected to the SDStationOEM II board via a flat cable equipped with 16-pin connectors on both ends. To connect to the analog audio and video panel there is only one 16-pin flat cable connector available on the SDStationOEM II board. It can be found on its top left side. Perform the connection as shown in the following figure:

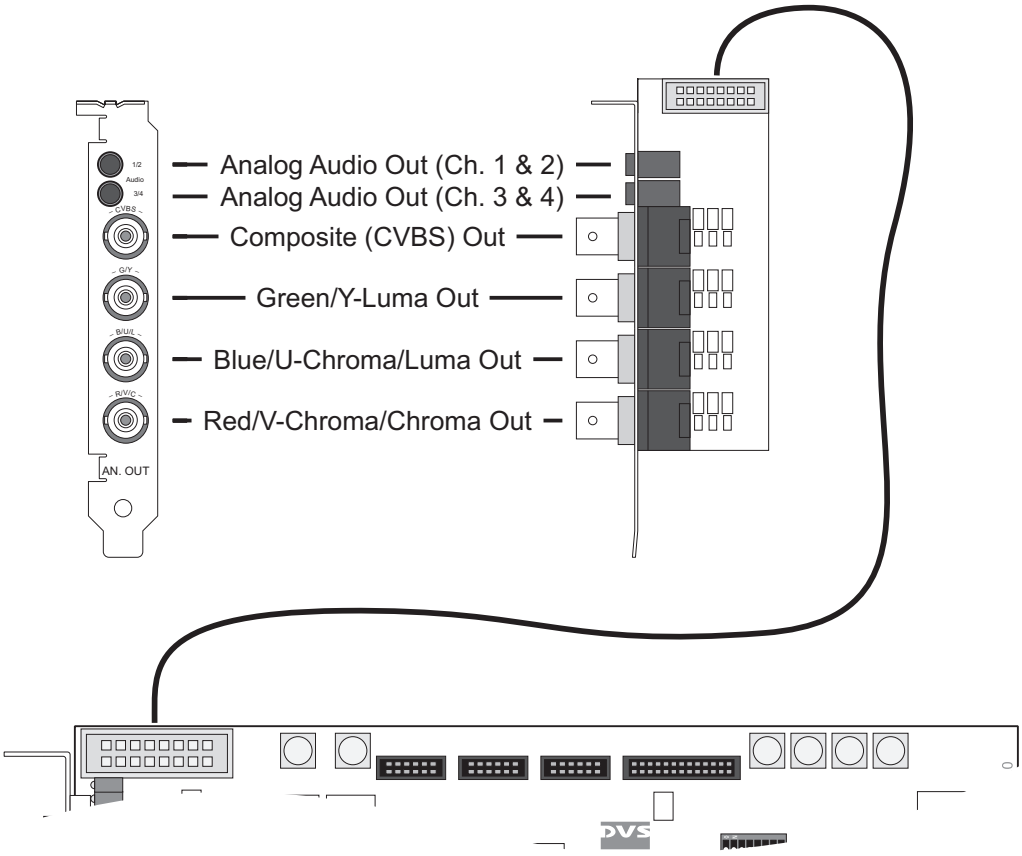


Figure 3-3: Internal connection of the analog audio and video panel

Connecting the RS-422 Panels

There are two RS-422 panels available for the SDStationOEM II. They will be connected via two flat cables with 12-pin connectors and two MCX plugs to the SDStationOEM II board. To perform the internal connections connect the panels to the board as shown in the following figure:

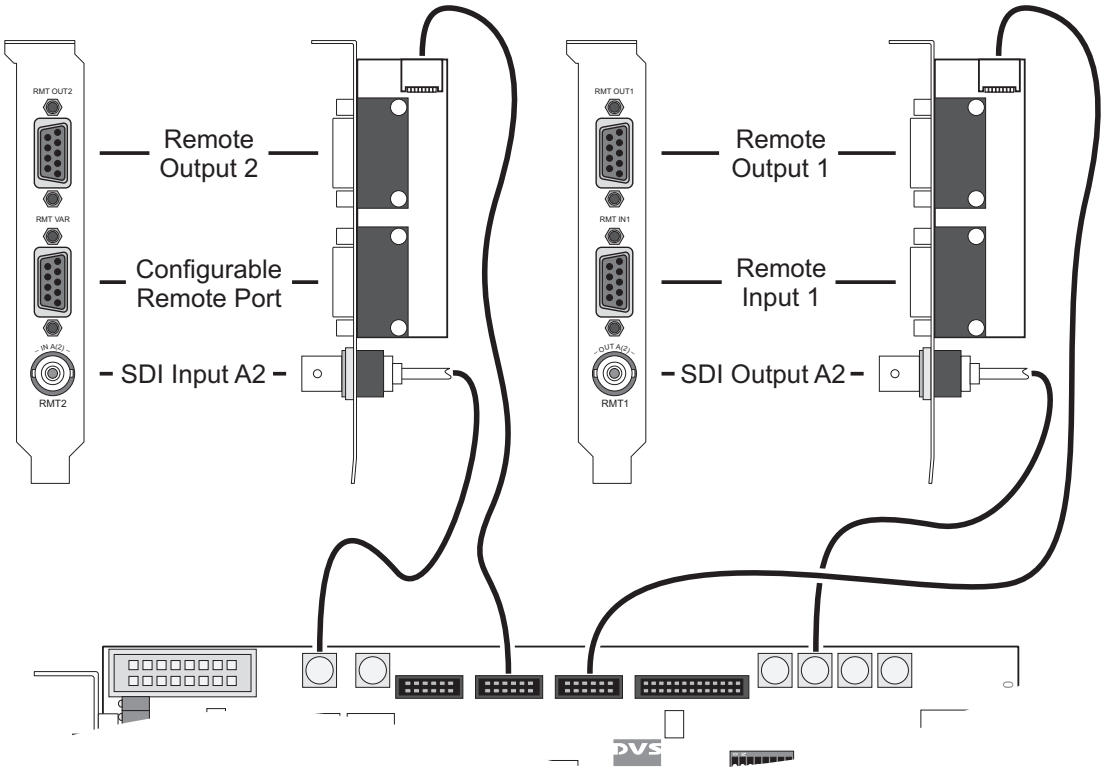


Figure 3-4: Internal connections of the RS-422 panels

Connecting the Serial Digital Interface (SDI) Panel

The serial digital interface (SDI) slot panel provides several BNC connectors for some of the various in- and output possibilities that the SDStationOEM II is capable of. The BNCs should be connected via their cables equipped with MCX connectors to the SDStationOEM II board as shown in the following figure:

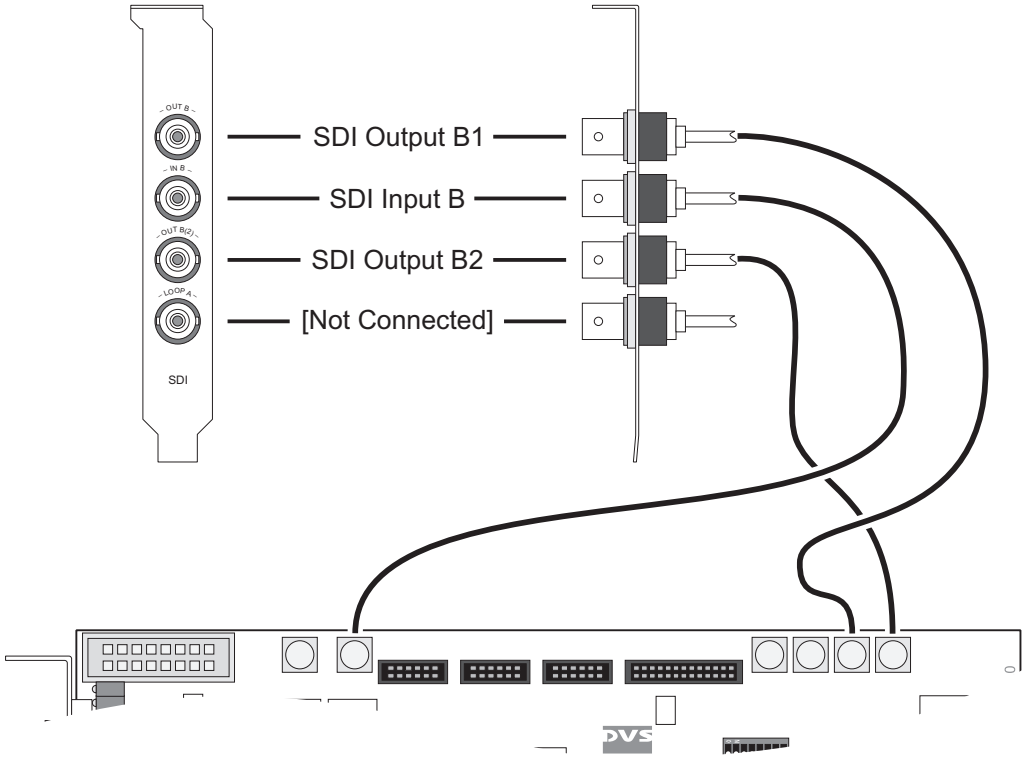


Figure 3-5: Internal connection of the serial digital interface (SDI) panel

Connecting the Audio Panel (TCI)

The audio slot panel (TCI) has to be connected via a 26-pin flat cable to the SDStationOEM II board. To perform the internal connections connect the panel to the board as shown in the following figure:

Prior to the installation of the audio panel (TCI) you have to set the jumpers on the printed board to their desired settings: you can choose between four digital stereo channels or three digital stereo channels and one LTC in- and output. This is described in detail in section “Jumper Settings of the Audio Panel (TCI)” on page 3-3.

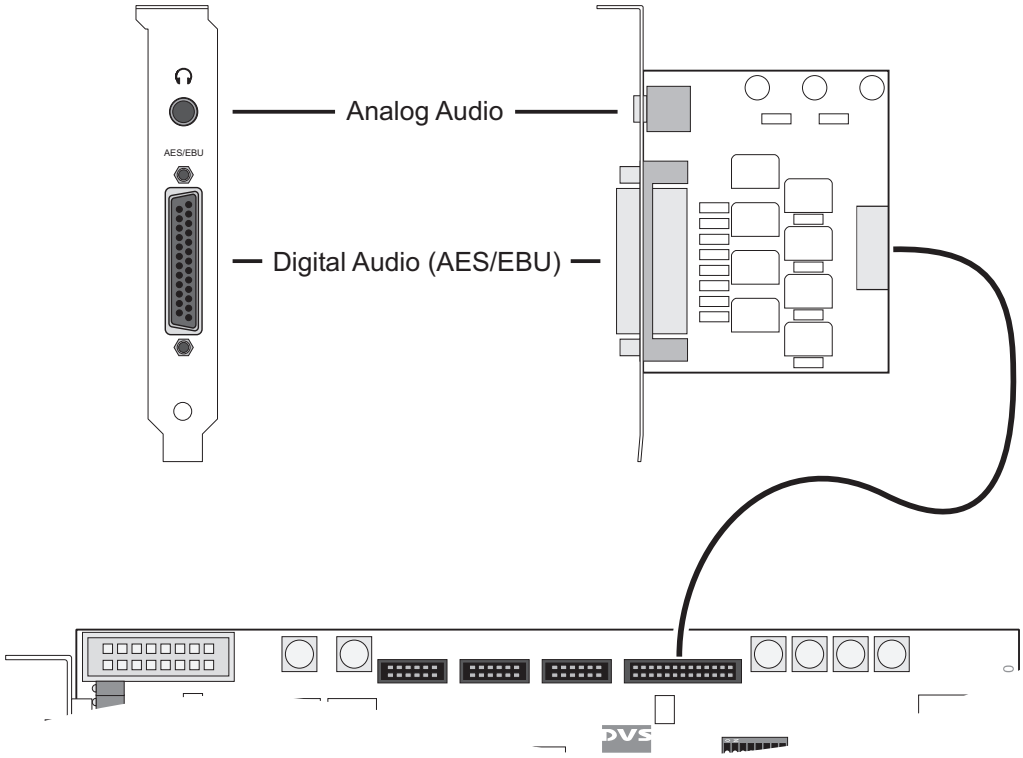


Figure 3-6: Internal connection of audio panel

Connecting the GPI and Wordclock Panel

The printed board behind the GPI connector plugs via a 12-pin flat cable to the top of the SDStationOEM II board. To perform the internal connections connect the panel to the board as shown in the following figure:

Prior to the installation of the GPI and audio wordclock panel you have to check the jumpers on the printed board of the GPI for their correct settings. This is described in detail in section “Jumper Settings of the GPI and Wordclock Panel” on page 3-4.

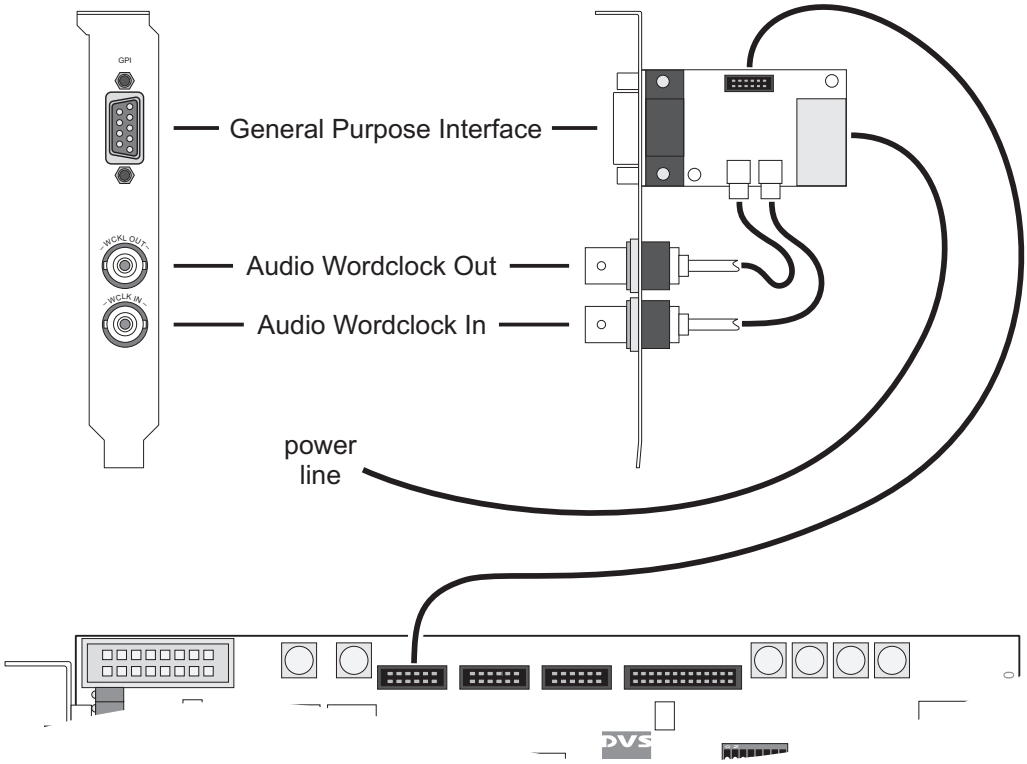


Figure 3-7: Internal connection of GPI and wordclock panel

The power line to be connected to the printed circuit board of the GPI has to be a standard power distribution line of your computer system. It should be of the same type as, for example, used to power your CD-ROM, with the following specifications:

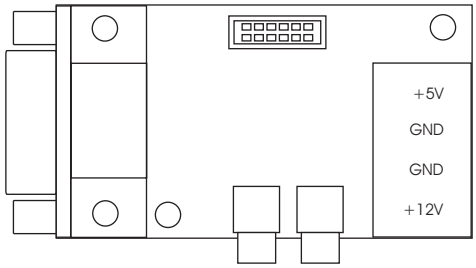


Figure 3-8: Power line specification

The connected extra power line of the GPI makes the GPI signal stronger and clearer. However, if you do not have a power line available, the GPI will still be functional.

Connecting the AES/EBU Audio Panel

The AES/EBU audio slot panel provides two DB-15 connectors to interface with digital audio. It is connected via a 26-pin flat cable to the SDStationOEM II board. To perform the internal connections connect the panel to the board as shown in the following figure:

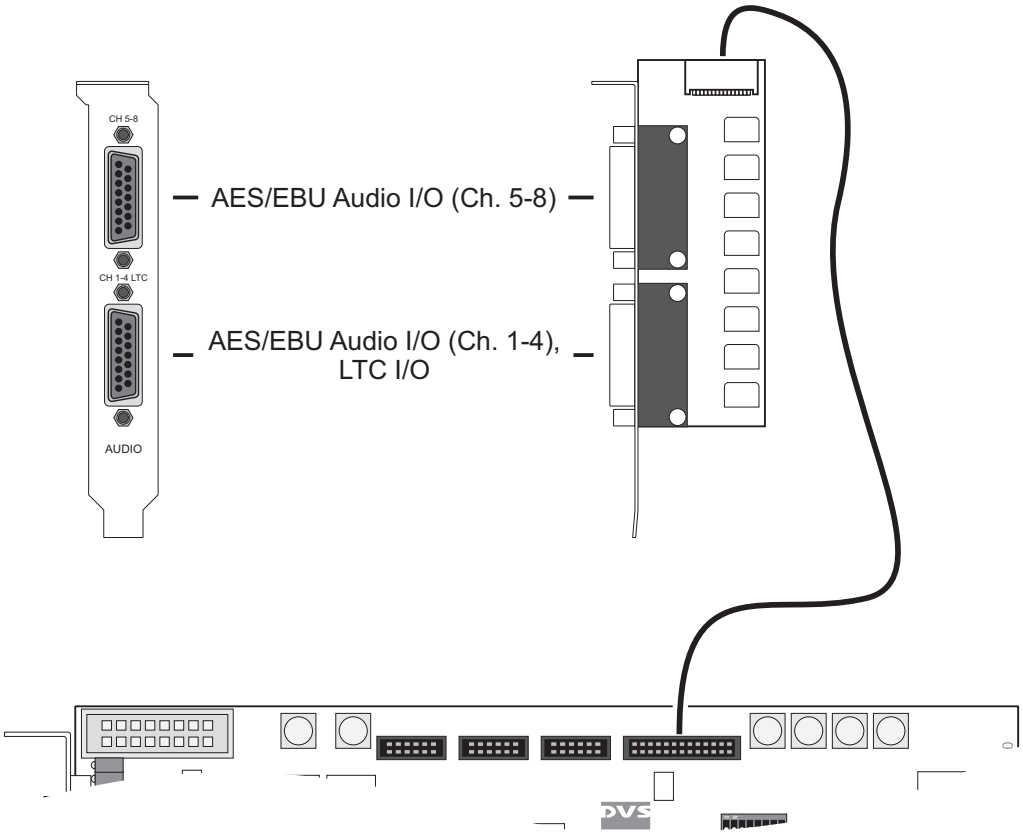


Figure 3-9: Internal connection of the AES/EBU audio panel

When the internal connections are all set up, the SDStationOEM II is properly connected to your computer system. As a last step you must now finish the installation.

3.1.4 Finishing the Installation

This step of installing the SDStationOEM II board is the last step to be performed. To finish the installation do the following:

- Close the computer casing.
- Connect all cables to the computer system again.
- Connect your audio and video equipment to the SDStationOEM II connectors.
- After this start the computer system.

Once the computer system has finished the loading of the operating system, the installation of the SDStationOEM II as a hardware is complete. To use the board and activate its features you have to install the DVS software as well (see section “Software Installation” on page 3-15).

3.2 Software Installation

Beside the files for software development, the SDK software package also contains the SDStationOEM II board driver and tools for basic hardware setup and diagnostics. Therefore, for descriptions of the software and driver installation, please refer to the separate SDK documentation.

Once the software installation is completed, you have to activate the feature set available for the SDStationOEM II with the delivered license key.

3.3 Setting the License Key

This section explains how to set the license key on the computer system equipped with the SDStationOEM II. The license key activates the individual features that you have ordered for your DVS product. After the SDK and the driver are installed, you have to set the license key for the SDStationOEM II to be able to use the full feature set.

The SDStationOEM II is capable of holding three license keys. The first key (key 1) is usually used for licensing the features that were ordered with the SDStationOEM II. Keys 2 and 3 are usually used for temporary licenses that you may have received for evaluation purposes. Each license key enables one or more (optional) features of the SDStationOEM II until date of expiration (if applicable). Each time the SDStationOEM II starts, all keys are checked and their features are combined.

Because DVS supports several operating system platforms, this section is divided into the different setup procedures for the respective operating system (i.e. 'Windows' and 'All Operating Systems').

3.3.1 Setting of License Key (Windows Only)

Once the SDK and the driver are properly installed, you have to set the license key for the SDStationOEM II to be able to use all ordered features.

To set the license key Windows offers you with the DVSConf program the possibility to use a standard graphical user interface.

You may also use the procedure described in section “Setting of License Key (All Operating Systems)” on page 3-17.

The following assumes that the DVSConf program is already running and that the driver is correctly loaded.

In case the driver is not already loaded, load the driver with the 'Driver' tab of the DVSConf program.

Further information on how to operate the DVSConf program can be found in the separate SDK documentation.

To set the license key with the help of the DVSConf program perform the following:

- Change to the 'Card0' tab.

For each installed SDStationOEM II board there is a 'Card' tab available. If you have more than one SDStationOEM II board installed in your computer system, you have to repeat the following steps with 'Card1', 'Card2', etc.

- Click on the button **SETUP** and select from the opening menu the option ***Set Licence***:

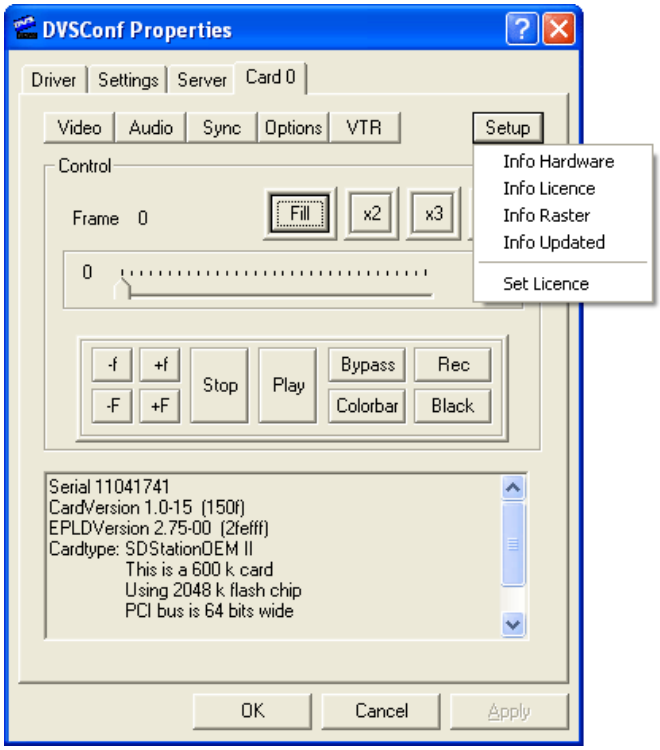


Figure 3-10: 'Card0' tab

The following dialog window opens:

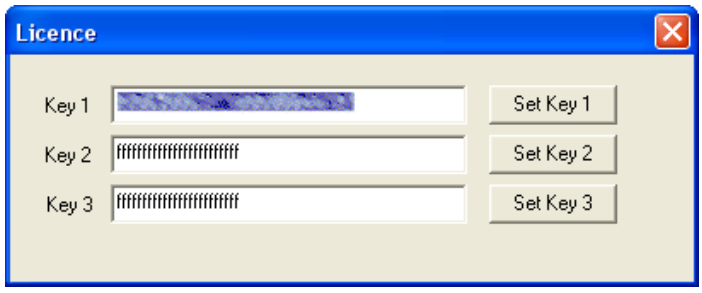


Figure 3-11: 'Licence' dialog window

- In the field 'Key 1' enter the license key that you have received with the SDStationOEM II and click the **SET KEY 1** button.

The **'Licence'** dialog window closes. The new license key is now set and will be stored non-volatile in the SDStationOEM II.

The features activated with this license key can be displayed by clicking the button **SETUP** and selecting from the menu the option ***Info Licence***.

- Repeat the described steps above to activate the features for keys 2 and 3, if appropriate.
- If you have more than one SDStationOEM II board installed in your computer system, change to their respective card tabs and repeat the steps to activate their features.
- Reboot the computer system.

Once the system has started, all licensed features will be available to the SDStationOEM II.

Depending on the SDK version, you may need to upgrade the PCI interface (firmware) of the SDStationOEM II board. More information about this can be found in section "Upgrading the PCI Interface" on page 3-19.

To be sure your SDStationOEM II board works properly, you may also test your installation. Details on how to perform a testing of your installation can be found in section "Testing the Installation" on page 3-22.

3.3.2 Setting of License Key (All Operating Systems)

Once the SDK and the driver are properly installed, you have to set the license key for the SDStationOEM II to be able to use all ordered features.

The following procedure uses the command line (shell, or in case of Windows MS DOS prompt). This is the common way for most operating systems to perform such a procedure.

To set the license key with the command line (shell), you have to open the shell first. After that perform the following:

In case the driver is not already loaded, load the driver. Further information about this can be found in the separate SDK documentation.

In case you have several SDStationOEM II boards installed, use the environment variable `SCSIVIDEO_CMD` and set it to `PCI,card:<x>` (with `<x>` as the number of the board) to access a particular board. Please refer to the SDK documentation for details about setting the variable `SCSIVIDEO_CMD`.

- Enter the command **`svram licence key1`** `<key value>`. For `<key value>` insert the license key that you received with the SDStationOEM II.

The new license key is set now and will be stored non-volatile in the SDStationOEM II.

The features activated with this licence key can be checked with the command **`svram licence show`**.

- Repeat the described steps to activate the features for keys 2 and 3, if appropriate, by altering the command respectively.
- If you have more than one SDStationOEM II board installed in your computer system, use the environment variable `SCSIVIDEO_CMD` to access the respective board and repeat the steps to activate its features.
- Reboot the computer system.

Once the system has started, all licensed features will be available to the SDStationOEM II.

Depending on the SDK version, you may need to upgrade the PCI interface (firmware) of the SDStationOEM II board. More information about this can be found in section “Upgrading the PCI Interface” on page 3-19.

To be sure your SDStationOEM II board works properly, you may also test your installation. Details on how to perform a testing of your installation can be found in section “Testing the Installation” on page 3-22.

3.4 Upgrading the PCI Interface

Depending on the SDK version you may need to upgrade the PCI interface (firmware) of the SDStationOEM II board. It can be done with a program named *eddyup###*. This section explains how to determine whether you need and how to perform a PCI interface upgrade.

An upgrade should be performed by qualified personnel only. Before you upgrade the PCI interface you have to close all other applications.

Be aware of a power failure. If this happens, you have to use the fallback PCI version of the SDStationOEM II board as detailed in chapter "Maintenance" on page 4-1.

For the newest version of the firmware (*eddyup###*) check the DVS OEM web pages (http://private.dvs.de/oem).

3.4.1 Determining the PCI Interface Version

Before upgrading the PCI interface you have to determine whether a PCI upgrade is necessary. For this you need to know the PCI interface version that is required at least to work properly with the SDK installed. You can find this information on the DVS OEM web pages (http://private.dvs.de/oem, see the respective page of your installed SDK). Look for the line that says 'Required firmware version: Version **35.56_40**' or similar. The numbers (bold in our example) tell you the PCI interface version.

Next you have to check the PCI interface version of your SDStationOEM II board:

The following procedure uses the command line (shell, or in case of Windows MS DOS prompt).

- Open a command line (shell).

If the driver is not already loaded, load the driver. Further information about this can be found in the separate SDK documentation.

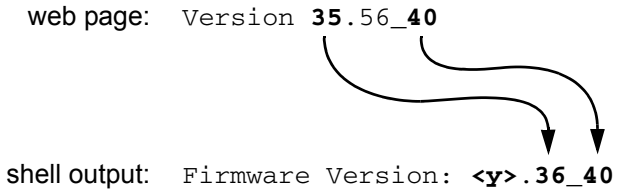
In case you have several SDStationOEM II boards installed, use the environment variable `SCSIVIDEO_CMD` and set it to `PCI,card:<x>` (with `<x>` as the number of the board) to access a particular board. Please refer to the SDK documentation for details about setting the variable `SCSIVIDEO_CMD`.

- Enter at the command line **`svram version info`**.
- In the output look for the line that says 'Firmware Version: **<y>.57_40**' or similar.

The number '<y>' indicates the type of board installed in your system and must be heeded in the following.

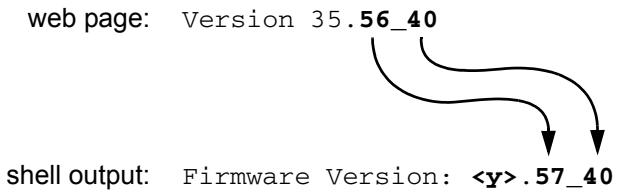
- Compare the numbers from the web page with the shell output as indicated in the following:
  - If <y> from the shell output is one or two (<y> = 1 or <y> = 2), then use the first number given on the web page for the comparison.

<y> = 1,
<y> = 2:



  - If <y> is greater than two (<y> > 2), then use the second number from the web page.

<y> > 2:



If the number in your applicable case is higher than the number following the dot of the shell output, the PCI interface has to be upgraded. The comparison must be done also for the number following the underscore (or hyphen). If the number on the web page is higher than the number in the output, you have to perform an upgrade. In our examples chosen here the SDStationOEM II board does not need a PCI interface upgrade.

3.4.2 Upgrading the PCI Interface

In case you determined that a PCI interface upgrade is necessary, perform the following:

- Download the newest available firmware version from the DVS OEM web pages.
- Open a command line (shell).

- Run the update program *eddyup###*.

  ### is the PCI interface version that *eddyup###* upgrades the SDStationOEM II board to (e.g. *eddyup_36.58_40* would upgrade the PCI interface to version 36-40 or 58-40. Make sure that an *eddyup###* of a high enough version is available.

  The program *eddyup###* upgrades all SDStationOEM II boards installed in the computer system.

  – First you have to wait while the program is inspecting the system.
  – After this you will be asked if you really want to upgrade the firmware. To confirm type in `Y` and press [Enter].
  – Then wait until the program terminates itself which may take several minutes.

- When *eddyup###* has finished the upgrade procedure, shut down the computer and wait at least one minute before rebooting it.

This will safely erase the old PCI interface from the SDStationOEM II board.

- Start the computer and, after the operating system has loaded, check the PCI interface version as described in section “Determining the PCI Interface Version” on page 3-19.

If the interface version is upgraded, the procedure is finished. If it is not upgraded, perform the procedure again and give the board more time to erase the old information.

3.5 Testing the Installation

After having installed and set up everything, you should test if the SDStationOEM II installation has been successful. The tools delivered with the SDK software package offer you the possibility to generate and display test pictures to check the SDStationOEM II hardware.

Because DVS supports several operating system platforms, this section is divided into the different procedures for the respective operating system (i.e. 'Windows Only' and 'All Operating Systems').

3.5.1 Testing the Installation (Windows Only)

To test the installation Windows offers you with the DVSConf program the possibility to use a standard graphical user interface. Perform the following:

You may also use the procedure described in section "Testing the Installation (All Operating Systems)" on page 3-24.

- Connect a video monitor to the analog or digital video output connectors of the SDStationOEM II (see chapter "Overview" on page 2-1).
- Open the DVSConf program.

In case the driver is not already loaded, load the driver with the 'Driver' tab of the DVSConf program.

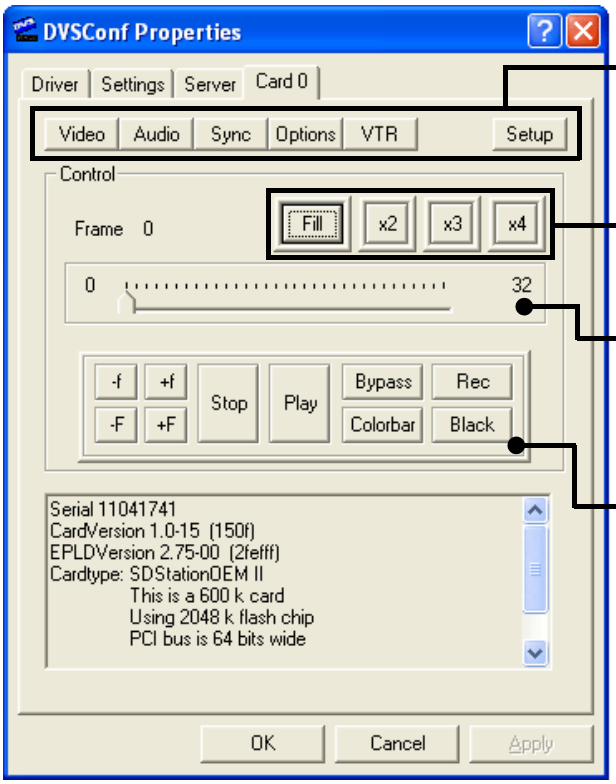
Further information on how to operate the DVSConf program can be found in the separate SDK documentation.

- Optionally you may change the settings on the 'Settings' and 'Server' tabs if desired.

Now the computer system is ready to generate test frames:

- Change to the 'Card0' tab.

For each installed SDStationOEM II board there is a 'Card' tab available. If you have more than one SDStationOEM II board installed in your computer system, you have to repeat the following steps with 'Card1', 'Card2', etc.



These buttons influence the video and audio settings of the video board.

These control buttons fill the whole video board buffer with a test picture. Using the **X** buttons you can superimpose the frame's timecode in different sizes over the test images.

The slider shows a timeline of the video material loaded into the video board buffer (depends on board buffer size and currently set video raster).

These buttons perform basic display operations on the video outputs:

-f/+f: Moves one field backward/forward.

-F/+F: Moves one frame backward/forward.

STOP: Stops a play-out.

PLAY: Starts a play-out.

BYPASS: Displays the digital video input signal at the outputs.

REC: Captures the digital video input to the video board buffer.

COLORBAR: Displays a color bar at the video outputs.

BLACK: Displays a black frame.

Figure 3-12: 'Card' tab overview of DVSConf program

- Use the buttons at the top of the 'Card' tab to select the desired video and audio settings.
- Use the **FILL**, **x2**, **x3**, or **x4** buttons to fill the SDStationOEM II board buffer with a test pattern.
- Perform the display operations with the lower buttons.

If this works, you have successfully completed the SDStationOEM II installation. Together with the SDK some sample programs are delivered that can also be used for testing.

The DVSConf program only affects the buffer and the I/O functions of the SDStationOEM II board. For testing optionally installed video hard disks you will have to use your own test routines.

3.5.2 Testing the Installation (All Operating Systems)

To test the installation perform the following:

The following procedure uses the command line (shell, or in case of Windows MS DOS prompt). This is the common way for most operating systems to perform such a procedure.

- Connect a video monitor to the analog or digital video output connectors of the SDStationOEM II (see chapter "Overview" on page 2-1).
- Open a command line (shell).

If the driver is not already loaded, load the driver. Further information about this can be found in the separate SDK documentation.

Now the computer system is ready to display test frames:

In case you have several SDStationOEM II boards installed, use the environment variable `SCSIVIDEO_CMD` and set it to `PCI,card:<x>` (with `<x>` as the number of the board) to access a particular board. Please refer to the SDK documentation for details about setting the variable `SCSIVIDEO_CMD`.

- Use `svram mode`, `svram sync`, `svram analog`, etc. to select the desired video and audio settings (further information about the commands can be found in the SDK documentation).
- Enter **`svram colorbar`** to display a color bar at the output.

If this works, you have successfully completed the SDStationOEM II installation. Together with the SDK some sample programs are delivered that can also be used for testing.

The svram program only affects the buffer and the I/O functions of the SDStationOEM II board. For testing optionally installed video hard disks you will have to use your own test routines.

Maintenance

This chapter explains maintenance work that you may perform on your own, i.e. it will be explained in detail what to do in case of a PCI upgrade failure (see section “Upgrading the PCI Interface” on page 3-19).

An upgrade of the PCI interface (see section “Upgrading the PCI Interface” on page 3-19) is a delicate procedure comparable to a BIOS upgrade of a computer motherboard. If, for example, an environmental extreme like a power failure occurs while the upgrade program is running, the PCI video board may loose all its programming.

Prior to performing the procedure for a PCI upgrade failure contact the DVS service department to make sure that this procedure is really necessary.

When an environmental extreme happens during a PCI upgrade and the programming of the PCI video board is lost, act as described in the following to restore it:

The computer system you are working on usually works with voltages that can be hazardous to your health.

Never work on the system or access its interior with the power cable(s) being plugged in. Make sure the power supply is disconnected from the components you intend to work on.

Computer hardware contains components that are sensitive to electrostatic discharge. If you touch them without precautionary measures, they can be destroyed.

Use a wrist strap connected to ground when accessing electronic parts and take care of grounding the video system. Avoid touching the components of the computer and the printed circuit boards of the SDStationOEM II.

- If appropriate, turn off the computer system where the SDStationOEM II is installed and disconnect its power cable(s).

- Open the casing of the computer system.

  For details on how to do this, please refer to the respective manufacturer's manual.

- Set the switch to the very right (position 8) of the DIP switch A on the PCI video board (cf. section "Overview of the Board" on page 2-3) to the 'ON' setting as indicated in section "DIP Switch Settings" on page 2-8.

  Do not alter the rest of the settings of the DIP switch, i.e. leave the other positions (i.e. 1 to 7) in their original state.

With the switch to the very right turned on the SDStationOEM II board will load a safe mode programming (fallback map) when initialized during start-up. Now use this fallback map to perform the PCI upgrade once again:

- Close the casing of the computer system and plug in its power cables.
- Turn on the computer system.
- After the start-up of the computer and the loading of the operating system run the PCI upgrade program (`eddyup###`) once again:

  The PCI upgrade program upgrades all installed DVS PCI video boards in your system.

  – First you have to wait while the program is inspecting the system.
  – After this you will be asked to confirm the upgrade of the firmware. For this type in `Y` and press [Enter].
  – Then wait until the program terminates itself which may take several minutes.

- When the update program has finished the procedure, shut down the computer.

You must now set the very right switch of DIP switch A back to its default position. For this perform the following:

- Disconnect the power cable(s) of the computer system.
- Open the casing of the computer system.
- Then set the very right switch of the DIP switch (position 8) back to its default setting as shown in section "DIP Switch Settings" on page 2-8.

  Do not alter the rest of the settings of the DIP switch, i.e. leave the other positions (i.e. 1 to 7) in their original state.

- Close the casing and plug in the power cable(s).

- Now start the computer.
- After the operating system has loaded check the PCI interface version as described in section “Upgrading the PCI Interface” on page 3-19.

If the interface version is upgraded, the procedure is finished.

Appendix

This chapter provides technical data and general information about the SDStationOEM II.

A.1 Technical Data

The following shows the technical data of the SDStationOEM II board.

The chassis of the computer system where the SDStationOEM II board is installed must be equipped with a sufficient ventilation for cooling reasons.

PCI bus requirements	PCI 32 or 64 bit at either 33 or 66 MHz
Board size	Half-length, single-slot
Electrical types	3.3 volt
Conformity	PCI Specification 2.2
Operating environmental conditions	5°C (41°F) to 45°C (113°F) 20% to 80% relative humidity, non-condensing
Storage environmental conditions	-17°C (0°F) to 70°C (158°F) 10% to 80% relative humidity, non-condensing

A.2 Hardware Specifications

.084 791.6 782.7nollowing table shows t2.7ha

Table A-1: SDStationOEM II specifications (cont.)

Formats	
Color Modes	YC_bC_r 4:2:2 YC_bC_rA 4:2:2:4 RGB 4:4:4 RGBA 4:4:4:4
Storage Format	Uncompressed YUV(A) 4:2:2(:4) / RGB(A) 4:4:4(:4) 8/10 bit, user selectable
Internal Processing	Color space conversion Input raster detection
Audio Format	48 kHz, 20/24 bit

A.3 Video Rasters

The following table shows the supported video rasters. All frequencies indicate the frame rate.

Table A-2: Supported video rasters

Raster	Name in DVS software[1]	Total lines per frame	x size	y size	Aspect ratio
525i /29.97 (NTSC)	NTSC	525	720	486	4:3
625i /25 (PAL)	PAL	625	720	576	4:3
525i /29.9 (NTSC HR)	NTSCHR	525	960	486	16:9
625i /25 (PAL HR)	PALHR	625	960	576	16:9

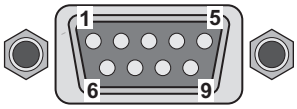
1) This is the string for the svram program; when using the C library (SDK) you have to write e.g. `SV_MODE_NTSC`.

You can find information about the internal data representation of video, audio and timecode in the SDK documentation.

A.4 Signal In- and Outputs

This section provides pin-out information about some of the connectors provided by the SDStationOEM II.

GPI (9-Pin D-Sub Connector)

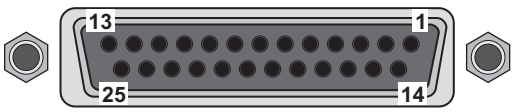


(external view;
male on interface, female on cable)

Pin No.	Signal
1	–
2	GND
3	GPI_OUT0 (GPI output 0)
4	GPI_IN0 (GPI input 0)
5	–
6	–
7	GPI_OUT1 (GPI output 1)
8	GPI_IN1 (GPI input 1)
9	GND

The GPI inputs are voltage sensing inputs with TTL trigger levels (> 2V = high, < 0,8V = low). Without any input they are set to 'high'. Thus, with a connected switch the user will be able to connect the voltage level to ground (GND) and no extra power supply has to be set for the GPI inputs.

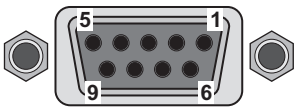
Digital Audio (25-Pin D-Sub Connector)



(external view;
female on interface, male on cable)

Pin No.	Signal	Pin No.	Signal
1	Audio OUT CH 7/8	14	/Audio OUT CH 7/8
2	GND	15	Audio OUT CH 5/6
3	/Audio OUT CH 5/6	16	GND
4	Audio OUT CH 3/4	17	/Audio OUT CH 3/4
5	GND	18	Audio OUT CH 1/2
6	/Audio OUT CH 1/2	19	GND
7	Audio IN CH 7/8	20	/Audio IN CH 7/8
8	GND	21	Audio IN CH 5/6
9	/Audio IN CH 5/6	22	GND
10	Audio IN CH 3/4	23	/Audio IN CH 3/4
11	GND	24	Audio IN CH 1/2
12	/Audio IN CH 1/2	25	GND
13	–		

RMT IN, RMT OUT and RMT VAR (9-Pin D-Sub Connectors)

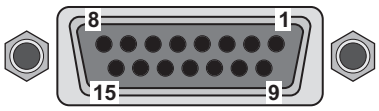


(external view;
female on interface, male on cable)

RMT IN & RMT VAR	
Pin No.	**Signal**
1	–
2	/TX_CON
3	RX_CON
4	GND
5	–
6	GND
7	TX_CON
8	/RX_CON
9	–

RMT OUT	
Pin No.	**Signal**
1	–
2	/RX_CON
3	TX_CON
4	GND
5	–
6	GND
7	RX_CON
8	/TX_CON
9	–

Digital Audio (15-Pin D-Sub Connector)



(external view;
female on interface, male on cable)

Table A-3: Digital Audio CH 1-4, LTC

Pin No.	Signal	Pin No.	Signal
1	LTC_IN	9	/LTC_IN
2	GND	10	AUDIO_IN_1/2
3	/AUDIO_IN_1/2	11	AUDIO_IN_3/4
4	/AUDIO_IN_3/4	12	GND
5	LTC_OUT	13	/LTC_OUT
6	GND	14	AUDIO_OUT_1/2
7	/AUDIO_OUT_1/2	15	AUDIO_OUT_3/4
8	/AUDIO_OUT_3/4		

Table A-4: Digital Audio CH 5-8

Pin No.	Signal	Pin No.	Signal
1	–	9	–
2	GND	10	AUDIO_IN_5/6
3	/AUDIO_IN_5/6	11	AUDIO_IN_7/8
4	/AUDIO_IN_7/8	12	GND
5	–	13	–
6	GND	14	AUDIO_OUT_5/6
7	/AUDIO_OUT_5/6	15	AUDIO_OUT_7/8
8	/AUDIO_OUT_7/8		

A.5 Conformity Declarations

The SDStationOEM II has been tested according to the applying national and international directives and regulations. The following states further information about the compliances and conformities.

A.5.1 RoHS Compliance

The EU directive 2002/95/EC 'Restriction of Hazardous Substances (RoHS)' prohibits the use of certain substances in electrical and electronic equipment. All DVS products are manufactured in compliance with this directive.

A.5.2 EC Declaration of Conformity (CE Marking)

DVS Digital Video Systems GmbH herewith declares that the following product(s) according to the provisions of the mentioned EC Directives – including their relevant revisions at the time of this declaration – is (are) in conformity with the detailed standards or other normative documents:

SDStationOEM II	EC Directives: – EMC Directive 89/336/EEC – Low-Voltage Directive 73/23/EEC
	Applied Harmonized Standards: – EN50081-1 – EN50082-2 – EN55022 – EN55024 – EN61000-3-2 – EN61000-3-3 – EN61000-4-2 – EN61000-4-3 – EN61000-4-4 – EN61000-4-6

A.5.3 FCC Compliance Statement

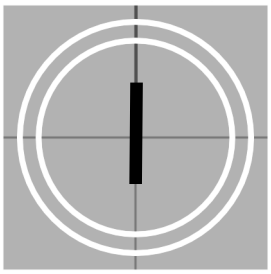
DVS Digital Video Systems GmbH herewith declares that the following equipment has been tested according to the applying valid FCC regulations:

– SDStationOEM II

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Connecting this device to peripheral devices that do not comply with Class A requirements or using an unshielded peripheral data cable could also result in harmful interference to radio or television reception. The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.



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